

**Notice of Allowability**

Application No.

10/004,512

Examiner

David C. Meyer

Applicant(s)

WALLEY, THOMAS M.

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**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Amendment filed on 24 October 2003.
2. ☒ The allowed claim(s) is/are 1-19.
3. ☒ The drawings filed on 26 October 2001 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All b) ☐ Some\* c) ☐ None of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
  - \* Certified copies not received: \_\_\_\_\_.
5. ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
  - (a) ☐ The translation of the foreign language provisional application has been received.
6. ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application. **THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

7. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
8. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
  - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
    - 1) ☐ hereto or 2) ☐ to Paper No. \_\_\_\_\_.
  - (b) ☐ including changes required by the proposed drawing correction filed \_\_\_\_\_, which has been approved by the Examiner.
  - (c) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No. \_\_\_\_\_.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the margin according to 37 CFR 1.121(d).

9. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

- |   |   |
|---|---|
| 1 <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 5 <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)          |
| 2 <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                       | 6 <input type="checkbox"/> Interview Summary (PTO-413), Paper No. _____             |
| 3 <input checked="" type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),<br>Paper No. <u>0803</u> | 7 <input type="checkbox"/> Examiner's Amendment/Comment                             |
| 4 <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit<br>of Biological Material                 | 8 <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
|   | 9 <input type="checkbox"/> Other  |

## **DETAILED ACTION**

### ***Response to Arguments***

Applicant's arguments, see page 6 of the Amendment filed on 24 October 2003, with respect to the rejection under 35 U.S.C. 102(e) of claims 1-5 have been fully considered and are persuasive. The rejection has been withdrawn.

### ***Allowable Subject Matter***

Claims 1-19 are allowed. Claims 8-18 were allowed in the prior Office Action. In that Office Action the Examiner indicated that claim 6 would be allowable if rewritten in independent form, including the limitations of the base claim and any intervening claims. Claim 6 depends from claim 1. Newly presented claim 19 combines the limitations of claims 1 and 6. As such, claim 19 is allowed.

The following is an examiner's statement of reasons for allowance of claims not allowed in the prior Office Action (claims 1-7): Claim 1 recites "a movable motion sensor comprising a first and a second two-dimensional array of photo detectors; and at least one lens for directing far-field images onto the first and the second arrays of photo detectors, the sensor configured to generate digital representations of the far-field images and to generate three-dimensional relative movement data based on a correlation of the digital representations of the far-field images, the movement data indicative of motion of the sensor in three dimensions".

Prior art devices include fixed arrays of cameras for producing multiple images of a moving object. See Kumar (US 6,204,852). These devices produce movement data indicative of motion of a moving object based on correlations of multiple images. These

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devices typically require calibration of the cameras in the array such that the dimensions of the viewed scene are known. As such, it would not be obvious to "reverse" this type of setup, employing a movable plurality of cameras that captures images of a scene and produces movement data indicative of motion of the plurality of cameras in three dimensions.

Prior art devices also include movable camera means having multiple cameras for simultaneously viewing different scenes at one time. See Gilbert (US 6,323,858). Such devices employ processor means for matching overlapping edges of the different scenes and producing a panoramic scene. However, these devices do not generate three-dimensional relative movement data. They do not compare, subtract, or otherwise "correlate" successively captured image data as is required by the phrase movement data.

Prior art devices also include stereoscopic camera means which employ multiple cameras, each capturing an image of a scene, the devices comparing the simultaneously captured images to determine a depth of an object of interest. See Okauchi (US 5,864,360). These devices do not "correlate" the captured images to produce movement data. Movement data necessarily involves a displacement and therefore a comparison of images captured at successive times.

Hence, the prior art of record fails to disclose or fairly suggest the invention as claimed, wherein in addition to the other claimed features, three-dimensional relative movement data is generated based on a correlation of the digital representations of far-field images, the movement data indicative of motion of the sensor in three-dimensions.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### ***Conclusion***


The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Nakamura (US 6,005,987), Tabata (US 6,411,326), Milgram (US 5,175,616), Katayama (US 2003/0035047 A1), Batterman (US 5,856,844), and Melen (US 6,205,241) disclose various aspects of the present invention.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David C. Meyer whose telephone number is 703-305-7955. The examiner can normally be reached on M-F 8:30-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David P. Porta can be reached on 703-308-4852. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0935.

DCM  
January 5, 2004

  
**DAVID PORTA**  
**SUPERVISORY PATENT EXAMINER**  
**TECHNOLOGY CENTER 2800**